

10/17  
(14)

## THE PROJECT

The purpose of the proposed project is to restore the stone structure built into the hillside on the Rt 27 side of the river that flows through the Nashoba Brook Conservation Land. The aim of the restoration would be to return the structure to a condition that both resolves present safety hazards (danger of collapse), and re-establishes certain masonry techniques and architectural styles used during the period of its original construction.

The structure, referred to locally as the "Potato Cave" or by the scholarly community as the Acton Chamber, is similar to hundreds of stone structures found throughout New England and Putnam County, New York State. The accepted historical and archaeological interpretation of their purpose was as storage chambers for root crops and other agricultural materials during the Colonial Period. Other scholars hold an alternative view that some at least of these chambers were constructed in the pre-Colonial era by Native Americans for the purpose of undertaking vision quests.\* Other theories abound.\*\* Regardless of the origin or purpose of this structure, it has a significant historical value important to preserve.

Among such structures, this chamber is unique in its form, having originally had a low tunnel entrance similar to our typical image of an igloo. This tunnel is of a modified post and lintel design, as is the main room of the chamber itself. Another unusual feature of the structure is the plan, which is L-shaped, with a stone post at the junction of the entrance tunnel and the portion of the main room that extends to the east. This support column may have been constructed later than the original structure.

Chambers of this sort typically have a post and lintel entrance, with corbelled side walls (gradually sloping inward as the courses rise) and capped off with a series of large, flat capstones laid crosswise and from front to back. Most chambers are not free standing, but are built partially into the side of a hill and mounded over with dirt on top, as is the case with the Acton Chamber. Many chambers have obvious astronomical alignments with significant solar or lunar events. That is also the case with the Acton Chamber, which has a small but carefully constructed aperture on its roof which aligns with the sunset summer solstice position of the sun.

Our chamber exhibits most of these features. The unusual tunnel entrance has been partially collapsed along its east wall for many years, allowing silt from erosion off the hillside to clog up the entrance. One or two of the capstones are missing. More recently, the west sidewall has begun to sag, one capstone being at a dangerous slant. It is presently unsafe for anyone to enter without using extreme caution not to touch the stones in the sagging wall.

The project as we are proposing it, would be conducted as a collaborative effort between the Town of Acton, in its guise of Land Stewardship Committee, and the New England Antiquities Research Association (NEARA), a non-profit organization with ties to the entire Northeast.

NEARA has been dedicated for over 40 years to research, public education, and preservation of these and other categories of stone structures existing both anciently and historically in the Northeast region. NEARA's interest in this project is to conduct a "model" chamber restoration which would include, in addition to the stone masonry restoration, appropriate historical and archaeological research and documentation to establish as fully as possible, the cultural and historical context. A comprehensive report, to be published in the *NEARA Journal* and possibly elsewhere, together with publicity current with the restoration, would round out the goals.

The precepts of the collaboration with NEARA, which I have carefully worked out to safeguard Acton's priority interest, stipulate that I, Linda McElroy, long time member of the NEARA Board of Directors and current Land Steward, would act as facilitator. In that capacity I would be solely responsible for communicating with NEARA about the project as it progresses, and would have full discretionary power concerning what NEARA members might be allowed on the site during the progress of the work. My role in the Acton side of the equation may yet need to be defined.

Notwithstanding this somewhat, but I felt necessary, stringent imposition on the NEARA component, the Board has agreed to contribute up to \$1,000 from their modest research budget to the enterprise. In return, they would expect to be able to publish the report of the project in the *NEARA Journal* and to undertake any appropriate publicity beneficial to both groups.

I have assembled a team of enthusiastic specialists from both within and outside NEARA, known personally me to be proficient in their areas of specialization. Only the archaeological post is unfilled at this time. Tom Tidman and I, based on the fees we expect from the very excellent stone mason and his assistant, the architect, and possibly the deed researcher, augmented by town expenses for some heavy equipment to move a supply of rebuilding stones, estimate the project would not exceed \$20,000. That sum includes some extra for unforeseen contingencies. We anticipate realistically that most of the grunt work would be carried out by volunteers from both components of the team.

I have detailed on a handout, the qualifications of the personnel so far committed to this project, as well as seven logical phases through which the process would proceed. Also included are separate reports from the stone mason and the architect, both of whom surveyed the chamber with me during the summer of 2004.

Additionally, the Acton component of the team would like eventually to erect a marker, or educational kiosk, which we hope would reduce the tendency toward vandalism. The chamber is already well enough known in the neighborhood and in Acton generally that keeping it quiet is not a realistic aim.

The two surveys of the chamber already conducted, were carried out the one hand by Suzanne Carlson, NEARA Board member, Publications Chairman, and restoration architect; and on the other, by Dr. David Stewart-Smith, a former NEARA member and specialist in dry stone masonry of the early Colonial and pre-Colonial period. Their reports are attached to the handout. Both agree that restoration is overdue, further collapse is imminent, and the historical value of preserving this possibly ancient structure is unquestioned. It must either be restored or razed.

\*It should be noted in this connection that during the mid-1600s, the Mass Bay Co., functioning as a governing body, granted rights to the Rev John Eliot to establish several "praying villages" ranging in area from present-day Natick to Littleton. These villages were intended to protect Native Americans from being hunted and other violence if they would agreed to "convert" to European culture—dress, customs, language, and religion. Many did so for protection, but continued to practice their own ways secretly. One such village, 4 square miles in extent, was centered in Littleton and included the portion of Acton where the chamber and multiple other stone sites are located. Sarah Doublet was the most famous of these praying village residents. The conservation land in Littleton bearing her name is contiguous with Acton at the two-town boundary.

\*\* It should also be noted that the remains of a stone "pen" lies directly east of the chamber, and that the whole complex is ¼ mile from the extensive stonework at the end of Wheeler Lane. The Wheeler Lane site, which represents a large and prosperous Colonial farming complex, includes house foundation, barn foundation, animal pens, droving corridor, and many purposely built stone walls. It is the opinion of the mason, David Stewart-Smith, that the chamber is of early Colonial date.

### COSTS

Tom Tidman and I have estimated that \$20,000 would cover the known expenses together with an estimate of the so far unknown ones. David SS's estimate of his expenses was very modest: \$750/per day for two men. Perhaps multiplied by 10. The free accommodation is assumed. Sue Carlson's fee would not be more than \$500 max. June Miller's fee would be at most a couple of hundred. Journal publication would be free (unless published as a monograph).

## THE TEAM

The project would be facilitated by **Linda McElroy**, former Land Stewardship Chair and long time NEARA Board member. She is not only somewhat knowledgeable about such structures, but is well-known to both organizations. She would coordinate not only between the two organizations, but also ensure that logistical issues are dealt with in a timely fashion. She would keep everyone's heads on straight as to matters of priority and jurisdiction. She understands the separate phases required to accomplish the full-scale project, and is well-acquainted with most of the personnel who have agreed to work on the project once it is funded. Acton's interests would supercede those of NEARA, but it is felt that the expertise that certain individuals within the NEARA directorate possess is superior to that of any of the current Land Stewards. The site would be off limits to all NEARA members except those designated as part of the team. Linda would interface with Tom Tidman as the Town's representative on any sensitive matter.

The collapsing wall deconstruction and subsequent stone reconstruction will be performed by **Dr. David Stewart-Smith**, who has studied these and associated stone structures both in New England and in Britain for many years. He has agreed to do the dry stone masonry for a very modest fee. He will bring an associate with whom he has worked regularly and who is a full time stone mason. Local accommodations would be provided by Linda McElroy.

The archaeological component of the project has not yet been filled.

**Suzanne Carlson**, restoration architect and long time NEARA Board member, would provide documentation from the NEARA Archives and site reports of this chamber done in the 1980s, together with drawings of its condition at that time. Additionally, she would see that the resulting report is published in the *NEARA Journal*. She is a valuable resource for suggesting solutions to miscellaneous problems that might arise. She would donate some of her time, perhaps expecting a small honorarium to cover expenses.

**Ted Ballard**, retired engineer and NEARA Research Chairman, who has been involved in most of NEARA's research projects over the past 10 years, and who conducts his own personal research, would also provide valuable suggestions concerning how various issues were handled on other restoration projects. His time would be minimal and at no charge.

**Land Stewards.** Several of the present land stewards have volunteered to help with such tasks as site preparation, brushing out an entry trail (probably from the railroad track), assembling equipment and required materials (e.g., building stones) at the site, researching information such as deeds and other historical documents contained within the town and county courthouse. We also expect that the stewards will assist with photography, publicity as appropriate, and ultimately site protection.

**Deed Researcher:** Should we need assistance from a professional deed researcher, **June Miller**, formerly a NEARA member, and very familiar with stone chambers, as well as being employed full time as a deed researcher, has agreed to help if needed. She would also be willing to train one or more of our people to do the work. She might charge a small fee.

## PROJECTED PHASES

### Phase I

Prepare site. Brush out area around chamber, create a flat area on which to store equipment, create trail from RR track into site, (maybe brush out along RR track). Stockpile building stones from town supply. Spring 2006. Acton volunteers.

### Phase II

Partially deconstruct the chamber area to be restored, especially roof slabs, setting them on hillside. Depending on whether or not the archaeological effort decides to sift the backfill on the outside of west wall, the collapsing wall may be deconstructed at this time as well. Summer 2006. Stone masons.

### Phase III

Archaeology. This phase could be only a couple of days or two weeks, depending on who directs the effort and what is contained within the soil at the site. MAS volunteers, directed by an archaeologist, might be willing to volunteer for the sifting work; they have the necessary equipment. Most likely the archaeologist would be the only person to expect a fee. Summer 2006.

### Phase IV

Reconstruction to be performed by two stone masons, working perhaps a total of 10 days, but not necessarily consecutively. Summer to early fall 2006.

### Phase V

Report writing and documentation. Fall and winter of 2006. Mostly volunteers from both NEARA and Acton.

### Phase VI

Publication. *NEARA Journal* will take this on. Timing will depend on other articles in the queue.

### Phase VII

Publicity, and site protection. Some to occur concurrently, and some as funds become available.

## **Survey of Chamber by David Stewart-Smith, Stone Mason, Oct. 19, 2004**

We viewed the chamber in the rain, leaves partly down, from both the outside and the inside. These are his observations and suggestions, which he will formalize and send on to us well before the Nov. 12 deadline for filing application for CPA money.

- Two options only: restore it or demolish it. It is a liability as is, as the west wall and/or one of the roof slabs could collapse at any time. The work will be extensive and expensive. He will submit an estimate for performing the restoration work with one other colleague, a Peter Wiggin(?), who is also a landscaper and with whom David has worked before. He is aware of Nov. 12 deadline.
- Recommended restoration: Entire west wall and the entire tunnel structure. Believes the structure to be early colonial, based on characteristics of stonework, which was not well done originally. Stonework is poor enough quality that he does not believe it important to number the stones as they are deconstructed so that they go back to their original locations. More important is to create a stable structure. Would be important to try to restore the local landscape if that can be determined from the surrounding (stone) features and from historical research.
- Stages of Work:
  1. Site preparation (to be done by our volunteers). Brush out the mounded area and surrounding ground as he will instruct on a plan of the site, so that a work area, free of brush is prepared. Significant trees are minimal here. Low brush and several large logs just below the entrance should be moved out of the way.
  2. He and Peter will remove the roof slabs and lay them up on the hillside.

3. If any archaeology (excavation) is to be done, it should be done before any further disturbance of the present structure is attempted. We agreed to try Prof. Curtiss Hoffman of Bridgewater State College, who is known to NEARA, is interested and competent in the type of structure we have here, and presumably could provide graduate students (free) to do the work of digging and screening. Stratigraphy studies most likely not worth doing, as the degree of erosion from the mounded top, along the collapsed tunnel east wall, and entrance has so silted up the tunnel area as to confuse any stratigraphic succession that might provide dating. Artifacts might be found in the chamber's original floor and along the outside of the walls. As the walls to be restored will have to be dug out anyway, excavation around those walls could be undertaken.
  4. When the archaeology is complete, the areas to be rebuilt will be completely deconstructed and a corridor dug out behind them, down to the level where rebuilding will begin, and wide enough into the mounded hillside to permit workspace for the reconstruction.
  5. The reconstructed walls are to be back-filled with crushed rock and/or small stones, and covered with landscape paper (similar to tyvek), to prevent or retard roots and water seepage from destabilizing the walls again.
  6. Further back filling, with dirt, around the reconstructed walls and crushed rock barrier together with restoration of the immediate landscaping to the extent desired, and clean up site.
- Materials and Equipment Required:
    1. Backhoe (can be brought down the rail-bed and run along the path that skirts the southwestern base of the hill into which the chamber is built. This path is sufficiently wide and level to admit such a vehicle. Some minimal brushing out of small bushes and tree saplings, to be done by LSCom under Guba's direction, would be necessary.
    2. Additional stones, of transportable and buildable size for the rebuilding, and/or crushed rock or small stones for the back-filling. These could be brought in along the same approach via railbed and path with an ATV and small trailer. (We assume that Town stockpiles and vehicles can be used.)
    3. Landscaping paper.

#### Historical Research:

1. David emphasized the importance of trying to understand the topographical and historical context within which this structure was built. The abutting building(?) foundation on the east suggests some sort of husbandry use for the chamber. The size of the oaks growing in the foundation hole will give a latest-possible date of construction. Stone used in such structures usually does not come from far away. The quarry or source site should be nearby and would be of interest to the study if located.
2. Title chain work, research into Town historical records and NEARA archives at the Exeter NH Library, engineering plans if any, local Historical Society records, should all be consulted.

#### Possible Schedule:

1. Historical research, title chain work, and other types of information gathering to be conducted through the winter of 2004-5 by both local Actonians and NEARA site specialists.
2. Site preparation by local volunteers early in 2005 open season, including the stockpiling of stones.
3. Stone masons to remove roof slabs, early summer 2005
4. Archaeological survey and possible excavation to be completed, summer season 2005.
5. Complete deconstruction of all portions of walls to be restored. Digging out of earth surrounding these walls, removal of tree stumps, debris, etc.: late summer/fall 2005
6. Stone masons to perform the reconstruction: early fall 2005
7. Back-filling and site restoration: before frost, fall 2005

[The following report was written by Linda McElroy just after the informal survey done by Sue Carlson, architect, and NEARA Board member:]

For the record, Sue Carlson, my architect friend and NEARA Board colleague, reviewed the Acton Chamber today (Tues., Aug 10). Only Bob Guba was able to be present.

Sue wants to mull the situation over a bit before she makes recommendations, but she is aware of our need to have in hand a written proposal in time (approx. Nov. 1) to apply to the CPA committee for funds for next summer.

Many years ago, she and I reviewed this chamber with two other NEARA members, when the chamber was more stable than it is now. She believes (and I concur) that at that time we measured the chamber and filed a site report which should be in our Archives at the Exeter Library in NH. She decided rather than re-measure today, to try to find the old report, as that would give us some guidelines as to how it used to look and therefore help us determine how much degradation has occurred in the twenty or so years that have passed. If those records cannot be found, we may have to measure, a task which some of our people could do this fall under my supervision.

There is no question in her mind that the structure needs to be repaired to prevent further collapse. Not only the tunnel, but now an interior wall is in danger of collapse. A mason will be required for a significant portion of the job. The issue here, as with most historical restorations, is whether to restore to the original condition (if that is even possible to determine), rebuild to a different standard (e.g., today's dry wall techniques), or simply shore it up so that it will not collapse further.

Not only is the tunnel entrance badly collapsed (one wall entirely tumbled), but one of the interior walls is bulging in an ominous way. The earlier measurements would indicate how recent that bulging is. We both do not remember it being that way, but we both have looked at so many chambers that it would be necessary to look at an earlier evaluation of this one to decide.

I believe that she will recommend that we do go for the archaeological evaluation as well. This could be a short kind of examination, perhaps being done in a day. We have several NEARA members who are also members of Mass Arch. and one man in particular, an archaeologist who teaches at Bridgewater State, who would be able to do a good evaluation if he has the time. He is very interested in these structures and similar sites. If he is not available, there are other options. If the archaeological evaluation is to be done, it should be done before the restoration begins or, for that matter, before anything, including the existing vegetation and the rotting stump at the entrance to the tunnel, is touched. (I was wrong in thinking that we could do some brushing out this fall; best not to touch it until the specialists are ready to begin.)

Sue also mentioned the desirability of doing a title chain and possibly looking up collateral documents to determine whether there has been any mention of this structure that would help to establish how early it was known. There are specialists who do this kind of work; we might find (or train) someone within our midst, however, to do it. The records should be available that might tell us when it was first "owned," or built, by Europeans.

Even if the decision is only to shore it up so that it will not collapse, the work will be considerable. We both feel that this reconstruction has excellent potential for becoming the pilot project on how to reconstruct a chamber that NEARA has been talking about doing for years, but so far has not quite pulled off. If facilitated properly (picking and choosing what assistance we want from NEARA and what we want to supply ourselves), the effort can be directed so that the organizations work collaboratively, with beneficial results for both sides, as well as providing good publicity for both and a neat site for Acton. I am submitting this now, so that there will be a report and record of what occurred yesterday. Sue may or may not submit her recommendations before I leave on Aug 20.

[The following is Sue Carlson's write up and preliminary recommendations from the same survey.]

Your report was great and demonstrates the professional approach we have in mind. Also I think you covered most of the territory as far as the meeting was concerned. As an addendum, here are some of my thoughts in a sort of outline form.:

I did mention the project to Bett yesterday and she was sure that there is a pretty comprehensive report in the files. I'll try to track it down. Also she did a little report in the Journal Vol. 16 # 2, 1981 which has pictures and drawings. If you don't have your Journals that far back I'll send it to you. Anyway, more grist for the mill.

In the best of all worlds with no \$constraints here are the steps in chronological order that I've been thinking about.

#### Step 1: preparatory study

1. Round up existing source material. Stuff in Exeter Library, Acton Library or your conservation records, Betts article.

2. Prepare a report on existing conditions, including updated measured drawings and photos. We (NEARA) could be responsible for this bit.

3. Title chain of owners and history of the site.

Title chain and probate search could be done by a volunteer, or contracted to June Miller or a professional firm. ( I worked for years with Commonwealth Collaborative in Leominster and I know they would do a great job.

I see two chunks to this, the contact period-colonial history and Indian pre-history and colonial relations. I just dug out the book *Ceremonial Time, Fifteen Thousand Years on One Square Mile* by John Hanson Mitchell. The square mile is in Littleton, but that's close enough to make it a really valuable resource.

4: Geology, ecology, hydrology etc. of the surrounding area (watershed).

Your folks must have this sort of information. It could provide some real clues after careful analysis.

#### Step 2: Archaeological investigation.

This is a natural for collaboration with Mass. Arch. Soc. You (Acton Conservation Comm. or whatever) could contract an archaeologist and we could provide volunteers to assist. There should be a contingency in the budget for additional testing if anything significant is found. They would recommend the best approach.

#### Step 3: Chamber restoration

Determine scope of the work; whether to stabilize, partially restore, do a complete reconstruction.

Based on funding possibilities, report recommendations and all of the above results, that decision can be made by your committee..

Prepare specifications;

This would be my baili-wick, and would include at least the following items:

"Boiler Plate", Contract, insurance requirements (if any) qualifications, special conditions and such things.

Clearing and preparation.

Temporary shoring and protection.

Marking and recording (drawings and photography)

Masonry work itself.

Restoration of the site (landscape).

Restoration work itself:

When we have a better handle on this we can determine budgets, schedules and the contractor selection process. Depending on the funding, Mass. bidding laws may come into play- I sure hope not!

Step 4: Final report (Mass. Hist. Comm. has criteria for project completion reports, and it would be a good idea to follow that whether or not they are involved.)

Publication (monograph or NEARA Journal)